

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

COLB, Sandford, T.
Sandford T. Colb & Co.
P.O. Box 2273
76122 Rehovot
ISRAËL

Date of mailing (day/month/year) 08 June 2000 (08.06.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 35264	
International application No. PCT/IL99/00495	International filing date (day/month/year) 09 September 1999 (09.09.99)

1. The following indications appeared on record concerning:

☒ the applicant
 ☐ the inventor
 ☐ the agent
 ☐ the common representative

Name and Address AROMIX TECHNOLOGIES LTD. Calgalei HaPlada Street 6 46722 Herzliya Israel	State of Nationality IL	State of Residence IL
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person
 ☒ the name
 ☒ the address
 ☒ the nationality
 ☒ the residence

Name and Address SENSEIT INC. c/o Carter Ledyard & Milburn 2 Wall Street New York, NY 10005 United States of America	State of Nationality US	State of Residence US
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Dominique DELMAS Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 23 May 2000 (23.05.00)	
International application No. PCT/IL99/00495	Applicant's or agent's file reference 35264
International filing date (day/month/year) 09 September 1999 (09.09.99)	Priority date (day/month/year) 10 September 1998 (10.09.98)
Applicant FISCH, Eliezer et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

10 April 2000 (10.04.00)

☐ in a notice effecting later election filed with the International Bureau on:
2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Claudio Borton Telephone No.: (41-22) 338.83.38
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IL 99/00495

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A61L9/03 A61L9/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 A61L G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 06 31 July 1995 (1995-07-31) & JP 07 055742 A (SHARP CORP), 3 March 1995 (1995-03-03)	2-14, 50-55
Y	abstract	2, 14-28
Y	US 5 724 256 A (LEE JOSEPH KINMAN ET AL) 3 March 1998 (1998-03-03) cited in the application column 1, paragraph 1 column 2, paragraphs 2, 6	2, 14-17, 19, 20, 25-28
	-/--	

☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

31 January 2000

Date of mailing of the international search report

07/02/2000

Name and mailing address of the ISA

European Patent Office, P B 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel (+31-70) 340-2040, Tx 31 651 epo nl
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Authorized officer

Muñoz, M

INTERNATIONAL SEARCH REPORT

Int. Patent Application No

PCT/IL 99/00495

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	<p>DATABASE WPI Section Ch, Week 199404 Derwent Publications Ltd., London, GB; Class D22, AN 1994-032881 XP002128286 & SU 1 785 696 A (POZDNYAKOV V N), 7 January 1993 (1993-01-07)</p>	2,50
Y	<p>abstract</p>	14-17, 19-21, 23-27
Y	<p>--- WO 97 37693 A (ARAUJO DE SOUSA MAURICIO) 16 October 1997 (1997-10-16) figures 1-3</p>	2,14-18, 22
X	<p>--- DATABSE WPI Section Ch, Week 199404 Derwent Publications Ltd., London, GB; Class D22, AN 1994-032884 XP002128291 & SU 1 785 699 A (POZDNYAKOV V N), 7 January 1993 (1993-01-07) abstract</p>	2,50
P,X	<p>--- WO 99 38102 A (NARAYANASWAMY BALA) 29 July 1999 (1999-07-29) page 1, paragraph 4 -page 2, paragraph 3 page 3, paragraphs 7,8 figures 1,3,4,9,10</p>	2,50
P,X	<p>--- WO 99 16476 A (PEREX AGORRETA FRANCISCO JAVIE) 8 April 1999 (1999-04-08) page 3 figure 1 claims 1,2</p>	2,14-17, 19, 23-27,50
A	<p>--- DICKINSON T A ET AL: "Current trends in artificial-nose technology" TRENDS IN BIOTECHNOLOGY,GB,ELSEVIER PUBLICATIONS, CAMBRIDGE, vol. 16, no. 6, page 250-258 XP004121066 ISSN: 0167-7799 the whole document</p>	
A	<p>--- RATTON L ET AL: "A comparative study of signal processing techniques for clustering microsensor data (a first step towards an artificial nose)" SENSORS AND ACTUATORS B,CH,ELSEVIER SEQUOIA S.A., LAUSANNE, vol. 41, no. 1-3, page 105-120 XP004089128 ISSN: 0925-4005</p>	

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IL 99/00495

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	<p>GOPEL W: "Chemical imaging: I. Concepts and visions for electronic and bioelectronic noses"</p> <p>SENSORS AND ACTUATORS B,CH,ELSEVIER</p> <p>SEQUOIA S.A., LAUSANNE,</p> <p>vol. 52, no. 1-2, page 125-142</p> <p>XP004152960</p> <p>ISSN: 0925-4005</p> <p>-----</p>	

INTERNATIONAL SEARCH REPORT

International application No

PCT/IL 99/00495

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos. 1, 32-49
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6 4(a)

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box 1.2

The present invention seeks protection for a system for instructing an odorant-mixing output device as how to mix a predetermined set of odorants in the correct amounts so as to faithfully reproduce any odorant input (unknown odor).

To solve the technical problem set out in the description (page 3, par.1) the apparatus is described as being composed of three different main parts:

A- an odorant sensing device or odorant fingerprint generator

B- Means for mathematically express such sensed fingerprint or odorant concentration vector generator

C- An odorant output device having a palette of predetermined fragrances and being capable of mixing these fragrances.

A search for claims 2-31 and 50-55 disclosing all three parts of the invention has been carried out.

Claim 1 discloses parts A and B of the apparatus and claims 31-41 disclose part C of the same apparatus. The description fails to disclose the invention in such terms that a technical problem and its solution can be understood (rule 5.1.(a)(iii) PCT) in relation to the features A+B alone (claim 1) or C alone (claims 32-49). Moreover they appear to lack the technical features to solve the technical problem expressed above under the light of Rule 6.3 PCT and a meaningful search is hence not possible.

The applicant's attention is drawn to the fact that claims, or parts of the claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1,32-49

The present invention seeks protection for a system for instructing an odorant-mixing output device as how to mix a predetermined set of odorants in the correct amounts so as to faithfully reproduce any odorant input (unknown odor).

To solve the technical problem set out in the description (page 3, par.1) the apparatus is described as being composed of three different main parts:

A- an odorant sensing device or odorant fingerprint generator

B- Means for mathematically express such sensed fingerprint or odorant concentration vector generator

C- An odorant output device having a palette of predetermined fragrances and being capable of mixing these fragrances.

A search for claims 2-31 and 50-55 disclosing all three parts of the invention has been carried out.

Claim 1 discloses parts A and B of the apparatus and claims 31-41 disclose part C of the same apparatus. The description fails to disclose the invention in such terms that a technical problem and its solution can be understood (rule 5,1.(a)(iii) PCT) in relation to the features A+B alone (claim 1) or C alone (claims 32-49). Moreover they appear to lack the technical features to solve the technical problem expressed above under the light of Rule 6.3 PCT and a meaningful search is hence not possible.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IL 99/00495

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 07055742	A	03-03-1995	NONE	
US 5724256	A	03-03-1998	NONE	
SU 1785696	A	07-01-1993	NONE	
WO 9737693	A	16-10-1997	BR 9601523 A	24-03-1998
			AU 2282397 A	29-10-1997
			CA 2251361 A	16-10-1997
			CN 1220611 A	23-06-1999
			EP 0892646 A	27-01-1999
			US 5972290 A	26-10-1999
SU 1785699	A	07-01-1993	NONE	
WO 9938102	A	29-07-1999	AU 2332399 A	09-08-1999
WO 9916476	A	08-04-1999	ES 2133115 A	16-08-1999

PATENT COOPERATION TREATY

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REC'D 22 JAN 2001

WIPO

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14

Applicant's or agent's file reference BO 43590		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/IL99/00495	International filing date (day/month/year) 09/09/1999	Priority date (day/month/year) 10/09/1998
International Patent Classification (IPC) or national classification and IPC A61L9/03		
Applicant SENSEIT INC. et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 10/04/2000	Date of completion of this report 18.01.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer De Waha, R Telephone No. +49 89 2399 8306



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IL99/00495

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:

Description, pages:

1-22 as originally filed

Claims, No.:

1-55 as originally filed

Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IL99/00495

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 1,32-49.

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 1,32-49.

2. A meaningful international preliminary examination report cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

☐ restricted the claims.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IL99/00495

- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
- ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☐ all parts.
- ☒ the parts relating to claims Nos. 2-31,50-55.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3-31,51-55
	No:	Claims	2,50
Inventive step (IS)	Yes:	Claims	29-31
	No:	Claims	3-28,51-55
Industrial applicability (IA)	Yes:	Claims	2-31,50-55
	No:	Claims	

2. Citations and explanations
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IL99/00495

ITEM III

CERTAIN CLAIMS WERE FOUND UNSEARCHABLE

Please refer to the comment of Box 1.2 of the Search Report dated 10.09.98 drafted by the search examiner where it is indicated that claims 1 and claims 32 to 49 were not searched. No preliminary substantial examination can be carried out for subject-matter that was not searched.

ITEM IV

NON-UNITY

For the sake of completeness it is indicated that, if the subject-matter of claims 32 to 49 would have been searched, the subject-matter would probably have related to a second invention, the first invention having consisted of a system comprising an odour sensor, a concentration vector generator and an output device, the second invention relating to an output device alone. As output devices are known, the output device could not be considered as a basis for the common inventive concept. On the other hand, the inventive concept of the first invention is not found within the conception of the output device alone.

ITEM V

REASONED STATEMENT

NOVELTY

Patent Abstract of Japan 07055742 (D1) dated 03.03.95 describes a system based upon

- A) an odour sensor providing odour information,
- B) a coding means for receiving or recording information which may then be separated (transformed) into output values into patterns corresponding to the converted output values obtained with the help of the conversion
- C) and a means for reproducing the odour

Although the citation does not include the terminology of the wording of the claims it must be concluded that the system of D1 falls within the scope of claims 2 and 50 of

the application on file (Art 33(2) PCT).

INVENTIVE STEP

Document D1 represents the closest prior art. This document, just as the application, relates to a component A of the system which is an analyser or odour sensor which is outputting the information identifying the odour in a mathematical form, a component B which is a recording or conversion means for separating/processing the output of component A and a component C that receives the output of B and reproduces the odour according to the pattern transmitted from component B.

The distinguishing feature between the subject-matter of D1 and the subject-matter of claims 3 to 13 lies in the fact that applicant has opted for a specific mathematical model to code the information and then utilizes these models to define whether fingerprints are close or not. The objective problem solved is to have a system that relies on a number of odour samples within the palette of the output device in order to reproduce a previously recorded/coded odour the latter showing a maximum of similarity/minimum of dissimilarity in comparison with the original odour. This is done by normalizing the odours of the palette (as perceived by a human nose) and at the same time normalizing the input odour and then relying on the mathematical model (vectors chosen as close as possible).

Publication "Current trends in artificial-nose technology" (D2) by Dickinson et al. , in the chapter entitled "Data processing and pattern recognition", relates to the recognition of computer-based pattern recognition algorithms and states that "cluster analysis provides a convenient way to isolate clusters or groups of response vectors by calculating the dissimilarity between each vector (dissimilarity being determined by representing each response as a point in multidimensional space and calculating the Euclidean distance between them)", p.254, left hand column. Moreover, the citation teaches that artificial-nose sensors "have been used to detect fragrances and evaluate them objectively in conjunction with human responses to the same fragrances", p.255, bottom of page.

In order to solve the problem mentioned above, the skilled person would have started from the teaching of D1 and would have applied the teaching of D2 to minimize the dissimilarity between original and reproduced odour. Claims 3 to 13 and 50 to 55

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IL99/00495

therefore do not involve an inventive step (Art 33(3) PCT).

Claims 14 to 31, dependant on claim 2, define the output device in a more precise way.

Claims 14 to 21 relate to features defining how odorants are freed (by scratching mechanically, by thermal energy/laser beam).

WO97/37693 (D3) describes capsules or other containments, e.g. granules or powders, that are ruptured in order to free the desired fragrance (page 5, lines 9-12 and 35-39). In view of this disclosure, it appears that claims 14 to 21 do not involve an inventive step.

Claims 22 to 27 relate to the mechanical features including substrate, trigger mechanism, reservoirs and fan. Fig 2 and 3 of D3 show the features of claims 22 - 27 which therefore appear not to involve an inventive step.

Claims 28 relates to a system based upon on an ink jet type mechanism for releasing the odorant. US-5 724 256 (D4) shows (Figure 4) a system based upon cassettes where ink-jet type droplets are being ejected, the droplets being introduced in an airstream generated by a fan (air handling device). Claim 28 therefore does not involve an inventive step.

Claims 29 to 31 relate to on an output device with a substrate having two faces, one being used as a laser R/W memory and the other being used as a support for the odorant palette. None of the prior art discloses these features and an inventive step could be recognized, the problem to be solved by the distinguishing feature being to provide another (alternative) system.